

MARINE REVIEW.

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A Waiting Situation—Improvement in Iron.

Pig iron is selling at present in the Mahoning valley at \$12.50. This is a marked advance over the price of two or three weeks ago when the market was greatly depressed by transactions that grew out of speculation. In some quarters the advance in iron is attributed to the strong stand taken by the makers of coke and producers of iron ore, who are both set upon higher prices for their product during 1896. To some extent the advance in pig iron is due to the position of the ore and coke dealers, but it is due more largely to the fact that furnace men in attempting to sell against the speculative market found that they were below cost of production and were compelled to quit. The pig iron market is, therefore, again getting into the healthful position that it should hold according to supply and demand. There is, however, no great demand as yet for iron at the advanced prices, and ore dealers are making no effort to force sales. They are simply awaiting the call from furnace men for new ore, knowing that their general agreement as to output and prices is binding and that there is to be a demand for Bessemer ore sufficient to provide a large business for all of the mines. In the meantime there can be nothing tangible about any talk of lake freights for next season.

Pig Iron Production and Stocks.

Everybody engaged in the iron business has for some time past been aware of the fact that the production of pig iron throughout the United States in 1895 was the greatest ever known and that stocks on hand at the close of the year were very light, but the official figures, just given out by the American Iron and Steel Association will, nevertheless, prove interesting. The report shows a production in 1895 of 9,446,308 gross tons, against 6,657,388 tons in 1894, 7,124,502 tons in 1893, 9,157,000 tons in 1892, 8,279,870 tons in 1891 and 9,202,703 tons in 1890. The production in 1895 was 2,788,920 tons, or nearly 42 per cent. more than in 1894, and 243,605 tons more than in 1890, when the largest previous production was attained. All the large pig iron producing states shared in the increased production. The most notable increase was in Pennsylvania, which produced 4,701,163 tons, or 49.76 per cent. of the total production, Allegheny county alone producing 2,054,585 tons. Allegheny county made 43.7 per cent. of the total production of Pennsylvania, and 590,796 tons more than all Ohio. The production of this one county in Pennsylvania was more than double that of Illinois.

The production of Bessemer pig iron in 1895 was 5,623,695 tons, an increase of 1,815,128 tons over 1894. The stocks of pig iron which were unsold in the hands of manufacturers or their agents on Dec. 31, 1893, and which were not intended for their own consumption, amounted to 662,068 gross tons; on Dec. 31, 1894, 597,688 tons, and on Dec. 31, 1895, 444,332 tons. There has been a decrease in charcoal stocks from 200,687 tons to 135,033 tons, Alabama and Michigan sharing largely in the decrease. There has been an increase in bituminous stock from 129,596 tons on June 30, 1895, to 193,363 tons on Dec. 31, 1895, chiefly in Alabama and in the Shenago and Mahoning valleys. The small quantity of all unsold stock at the close of 1895 is remarkable. It was only 4.7 per cent. of the year's total production and represents about fifteen days' production of the active furnaces on Dec. 31.

Prices of Fuel.

The committee on steamboat fuel, which was given full power by the Lake Carriers' Association to deal with coal shippers and fueling concerns, has decided to make no change in the arrangements that prevailed last season at Buffalo. No fuel will be purchased under any circumstances from shippers of hard coal. At Cleveland and other Ohio ports the main efforts of the committee will be directed towards trying to have the soft coal shippers name a reasonable price at which they will sell fuel to vessels furnished with cargoes. Before going to Detroit the fuel dealers of Cleveland who are not classed among the shippers made a price of \$2.15 for coal from dock and \$2.25 for coal from lighter. This is an advance of only 15 cents over last year's prices, which is considered reasonable in view of higher prices of mining. The advance would very probably have been greater but for the fact that one fuel dealer had made a number of contracts at the prices named and this was the means of settling the matter. The soft coal shippers will very probably demand \$2.25 a ton for fuel at cargo docks, and may not yield anything to the vessel owners' committee, but this committee is empowered to act for the association throughout the season, and if nothing is gained immediately

conditions may change after the season is well opened up so that vessels can run without coal cargoes if the fueling question is not satisfactorily settled.

Light-House Officials Favor Gas Buoys.

It is evident that the light-house board will make a strong effort to secure a large appropriation from the present congress for gas buoys, and as it is expected that the lakes will get a share of these buoys, representatives of lake districts should be urged to support any appropriation item for this purpose. The buoys will be of the Pintsch type, as they have been found far more serviceable than any other lighted buoy as yet introduced. The systems of electric buoys that have been tried have proven very costly and unreliable. Light-house officials are greatly pleased with the results thus far obtained from the few gas buoys in Boston harbor and at Erie, Pa., and they pronounce them of the greatest permanent aid to navigation. Their plan now is to secure, if possible, appropriations for a large number of the buoys to be placed at the entrance and along the sides of ship channels, red to starboard and white to port. Others will doubtless be used as danger signals marking obstructions at points where light-houses are not erected.

Clear Sailing for the Scheme of Dams.

It is now more than probable that the present congress will adopt a resolution providing for an investigation of the question of regulating lake levels by a dam at Niagara or by a system of dams at different points in the connecting channels of the lakes. A sub-committee of the house committee on rivers and harbors is ready to report favorably on Representative Griswald's resolution covering this question in the house and Senator Brice has the matter well in hand in the senate. The report of the house sub-committee says:

"No other nation possesses a system of natural interior water communication comparable in extent and in conditions favorable to commerce with that which the United States possesses in the great lakes. The development of the territory bordering upon these waters is one of the marvels of our history, and has led recently to the study of new methods for improving their harbor facilities. Heretofore the work done by the government in carrying out these plans of improvement has been chiefly the removal of obstructions and the excavations of channels, but of late attention has been strongly drawn to a comparatively new plan for increasing and conserving the available depth of water in the harbors through the regulation and control of the level of the great lakes by a system of dams at their narrow outlets similar in principle to the reservoir system already applied to the Mississippi and other great rivers. It is a fact well established that for years there has been a steady subsidence in the waters of the great lakes until their present level is from 4 to 5 feet below the normal height. Navigation is already seriously hindered by this lowering of the lake levels, which causes a great sacrifice in carrying capacity by the vessels engaged in freight traffic. To appreciate the great value of the proposed increase in the depth of the lake harbors it must be borne in mind that the percentage of gain is to be calculated from the least depth, minus that which measures the displacement of the unloaded vessel. If this displacement be 6 feet in a 16-foot channel the addition of 1 foot would be 10 per cent. of gain in weight of the load to be carried, and 3 feet of additional depth would mean an increase of carrying power of nearly 30 per cent. to the crafts which ply the lakes. If by the system of regulation referred to this additional depth of water could be secured the same purpose would be served as though there had been an equal amount of dredging. The raising and conserving of the water level of the lakes is a matter of vast importance, indeed of vital necessity to the internal commerce of the nation. The plan here suggested for accomplishing this has the support of very distinguished engineers, and in view of the magnitude of the interests involved your sub-committee would respectfully recommend that the resolution be favorably reported."

"Howell's Steam Vessels and Marine Engines," published by the American Shipbuilder, No. 7 Coenties slip, New York, is a compilation of engravings and matter that has appeared in the columns of the Shipbuilder from time to time, showing and describing some of the principal steamships and steam craft, with line engravings of a number of marine engines of all kinds. About forty portraits of prominent marine men on the coast appear in the book. It will prove most interesting to marine and mechanical engineers, although there are several chapters on sailing ships and steam yachts. The price is \$5.

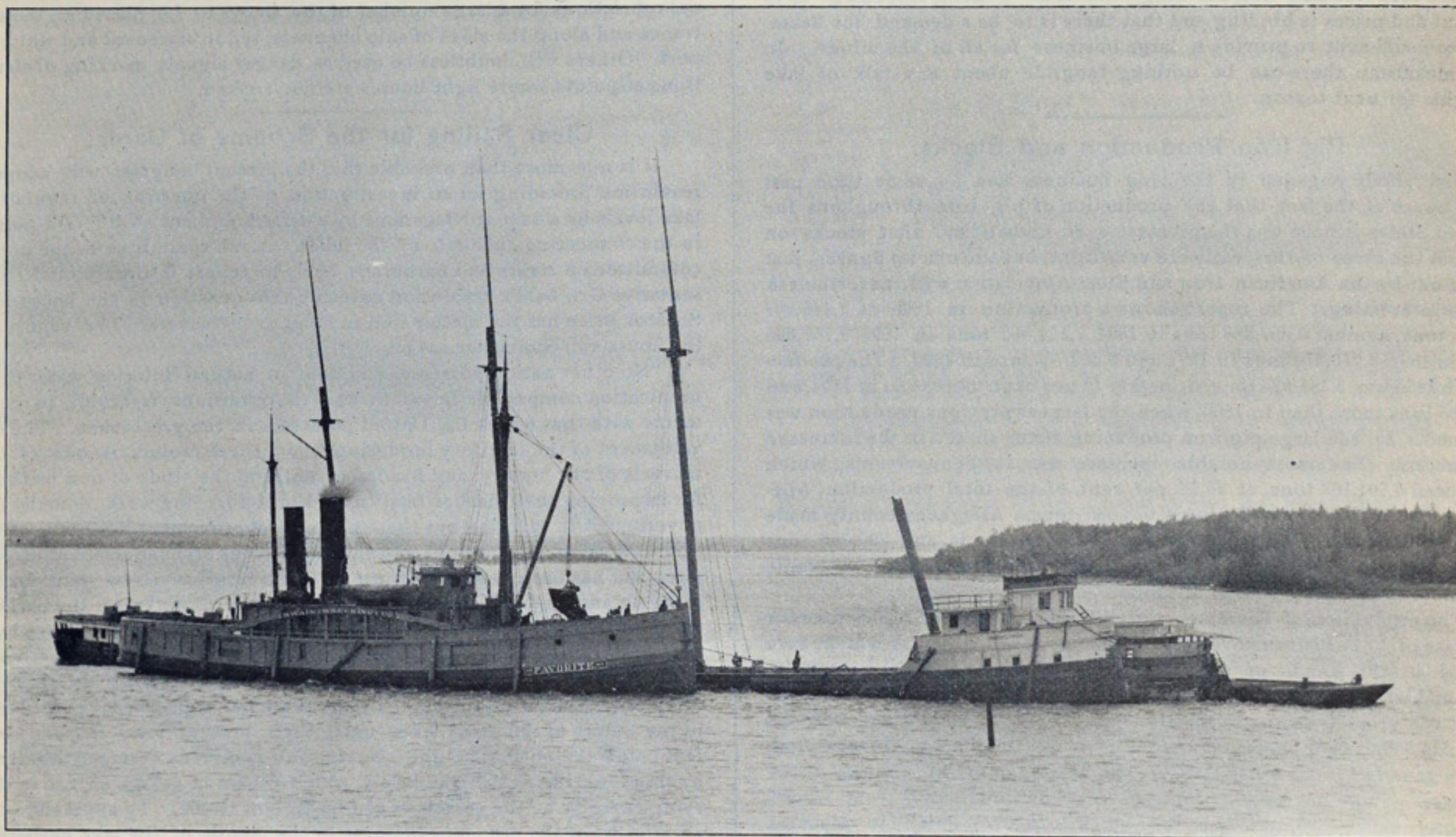
New Scheme for a Lake Information Bureau.

For several years past, the Lake Marine News Association, a corporation controlled by newspaper publishers, and having headquarters in Chicago, has been engaged in collecting and distributing marine news to all of the principal daily newspapers on the lakes. The affairs of this association are managed by Homer J. Carr, who was engaged for a long time as marine reporter on the Chicago Tribune, and who has a thorough knowledge of what is required in the line of marine news by the newspapers. Supported by the publishers of the Chicago papers, Mr. Carr has built up a force of about 125 correspondents around the lakes and has secured full control of the newspaper work. He proposes to extend the service next season to include telegraphic reports to vessel owners, shippers, underwriters, wrecking companies and others, who may be interested in speedier receipt of news than they have had in the past through the columns of the daily papers. His plan is to have vessel owners, for instance, pay a fixed charge for the season, with the understanding that they will receive direct, and in advance of publication in the newspapers, any information that may be secured by this corps of correspondents; and in order to make the service more valuable to vessel owners, he proposes to employ correspondents at new points, especially where vessels are liable to be in shelter, during unfavorable weather, and where it would be necessary to provide special means for securing

Fog Signal Reflectors.

At several points on the lakes where fog signals are maintained by the United States light-house service, large semi-circular reflectors, designed to cause an increase of sound far out in the lake and to partly overcome the annoyance on shore, have been erected by the light-house officials. The scheme has worked to great advantage, and since success has attended it, at least two engineer officers of the army, in charge of light-house work on the lakes, have been credited in different newspapers with the invention. The matter is not one of great importance, but the REVIEW believes in placing credit for it where it is due, and we are quite certain that the first suggestion of a sound-reflector for fog signals came from R. T. Lewis of Duluth, who wrote the light-house board on the subject on August 11, 1894. Mr. Lewis was then mayor of Duluth. If there was any reference to the matter by a government engineer previous to the date noted the REVIEW is wrong, but if not the engineers should not have credit for the invention either by claim or assent to an erroneous impression.

James A. Lawrie and Walter D. Spaulding some time ago started the Soo Machine Works at Sault Ste. Marie, Mich. The Sault is not a point specially adapted to a profitable business in machinery repairs. Accidents requiring shop work rarely occur while vessels are hustling to and



SWAIN WRECKING COMPANY'S STEAMER FAVORITE WORKING ON THE R. L. FRYER.

the names of such vessels. To meet the demands of underwriters, it is proposed to send dispatches direct to all subscribers in this line, upon receipt of news at the main office in Chicago of a disaster of any kind. These advantages over the newspaper service will give an idea of Mr. Carr's plans. Before the opening of navigation, he will call on or communicate with leading vessel owners, shippers and others regarding his scheme, and although its advantages do not open up to him a field equal to that which he has had in the newspaper work, the REVIEW is quite certain that he will do the best that can be done with it, if it is undertaken, and that his dealings with vessel owners will be business-like and honorable.

Itasca is the name of a new town on Allouez Bay in the southerly portion of the body of water forming the harbors of Duluth and Superior. The Chicago, St. Paul, Minneapolis & Omaha Ry., the Northwestern Coal Railway Co. and the Duluth & Winnipeg Ry. Co. have spent large sums of money in constructing a harbor and terminals at this point, but progress in the work was delayed last year on account of general business depression. It is now said that the Omaha road is building a switch yard, merchandise docks, shops and locomotive round house, preparatory to building up a lake trade at Itasca next season, and that the Canadian Pacific and Duluth, South Shore & Atlantic roads are also arranging for terminal facilities at that point.

from Lake Superior, and when such accidents do occur repairs are put off, if it is at all possible, until a Lake Erie port is reached and there is forced delay to the ship in handling cargo. Messrs. Lawrie and Spaulding did not make a go of their shop, but they have taken their failure philosophically. They write the REVIEW that circumstances have combined to force them to abandon their business. "We will not complain," they say, "further than to note that the fact that we are alive now is due more to this healthful northern atmosphere, and to the exercise we have had hustling for work, than to any great volume of business. Our lake friends are to be congratulated upon the excessive lightness of their repair bills at this point."

In referring to dock improvements at the several ore shipping ports on Lake Superior, the REVIEW neglected to note improvements that are being made in the old dock of the Wisconsin Central Co. The pocket elevation in this reconstructed dock will be 59 feet 9 inches from the water, and the floors of new pockets will be placed at an angle of 50 degrees, which is the sharpest angle to be found in any dock on the lakes. In the Duluth dock the floor angle is only 45 degrees, and in the new dock of the Chicago & Northwestern Co. at Ashland it is only 40 degrees. This extension to the Wisconsin Central dock will give the most rapid downward movement to ore that has as yet been attempted on the lakes, and place them ahead of other docks at Ashland for quick work.

Present Condition of F. W. Wheeler & Co's Ship Yard.

An engraving on this page shows the present condition of the ship yard of F. W. Wheeler & Co. at West Bay City, Mich., where extensive improvements and alterations have been made recently, so as to permit of rapid work on eight big steel vessels which that firm now has under contract. These eight vessels—five freight steamers, two freight barges and a car ferry—are of an aggregate value of \$1,675,000, and some important changes in the plant have been required on account of this large amount of new work. The additions are substantially as follows: Two 10-ton locomotive cranes, 70 feet radius; one 4-ton Brown hoist; new machine shop with complete outfit of tools, such as punches, bending rolls, planers, frame bending machines, shears, counter sinks, etc.; two slips with stocks for two 450-foot vessels and one 400-foot vessel, with a 15-ton 130-foot cantilever Brown hoist, and one 10-ton traveling locomotive crane for handling material. All new tools are operated by independent motors and generators of Westinghouse make.

In General.

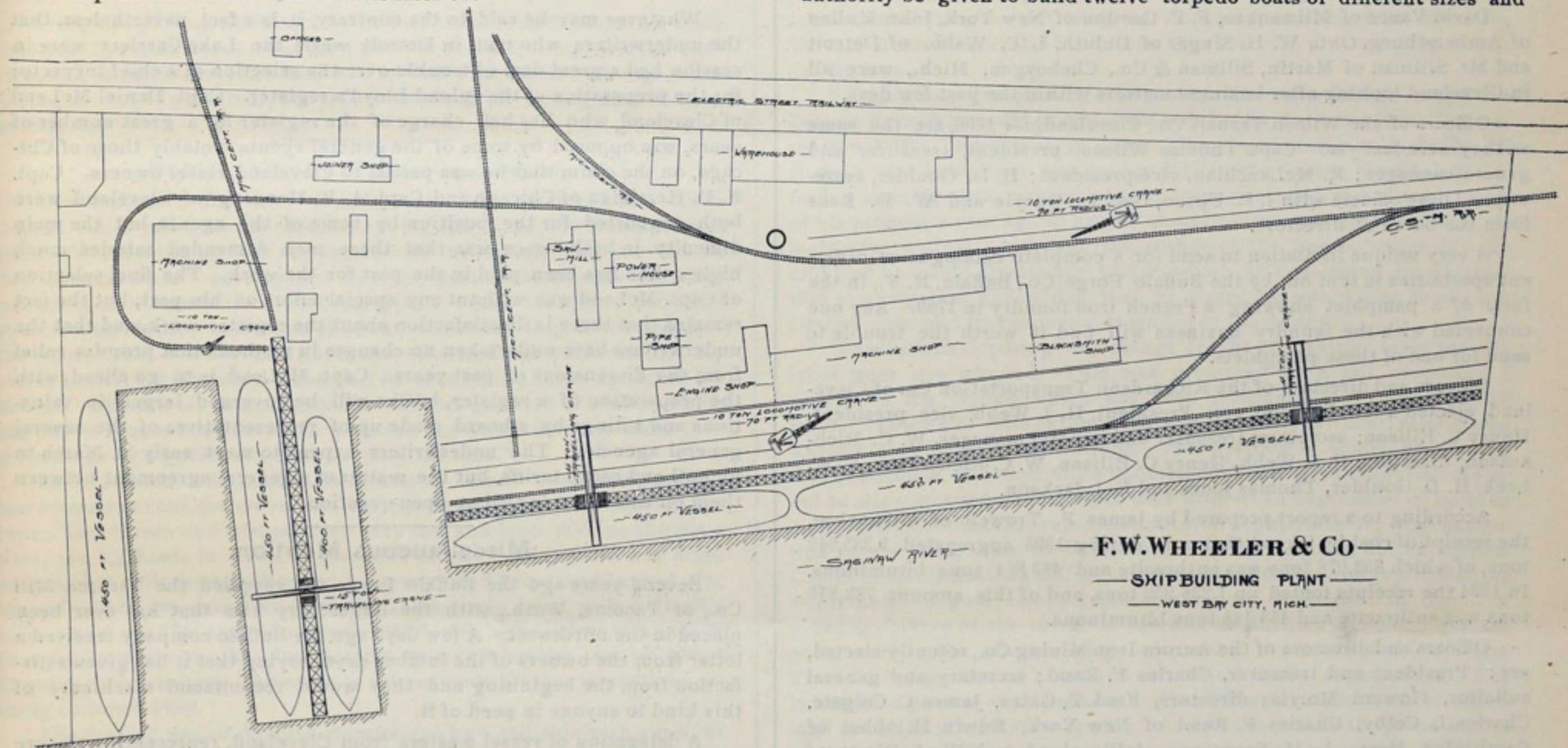
H. M. Curry of Pittsburgh, well known to ore dealers who have had business with the Carnegie Steel Co., has gone to California for a long rest.

Capt. Nicoll Ludlow, U. S. N., who is now on waiting orders in Washington, will be assigned to duty on the steel board and will probably be made president of the board a little later on.

who figured out these proportions must have remained awake nights over his job.

The United States supervising inspectors of steam vessels, who are now in session at Washington, have been requested by steel manufacturers to make the limit of tensile strength for plate to go into marine boilers 60,000 pounds per square inch instead of 70,000 or 80,000 pounds. The steel makers also ask that the board establish a chemical test to prevent the introduction of too much phosphorus and sulphur into the steel, which results, it is claimed, in attaining a higher tensile strength, but involves a loss of other material requirements at the expense of safety.

Secretary Herbert has sent a reply to the resolution of the senate asking whether it would be advantageous to contract for six battleships instead of for the two at present authorized. He says: "The department does not deem it advisable to recommend that any bids already received and not accepted should be further considered, for it sees no reason why, if other ships are now authorized, the building of them should not be also open to competition. Since the department's plan for battleships have been completed, and as all of the contractors in the United States have had opportunity to inspect these plans, and as they have been examined by all those able to build the ships, there seems to be no reason why any delay should occur in letting out contracts for new ships to be authorized by this congress." The secretary requests that authority be given to build twelve torpedo boats of different sizes and



In three months of last year, Harland & Wolff, Belfast ship builders, launched six steamers, the collective tonnage of which was 45,530—nearly 600 tons a day. Making a locomotive a day is a small item compared with this record.

Nine vessels, including two battle-ships and three gunboats, are now under way at the ship yard of the Newport News Ship Building and Dry Dock Co. The company's latest contract provides for a second boat for the Plant line, to cost about \$50,000.

The board of naval bureau chiefs has decided to furnish gunboat No 10, to be built by Lewis Nixon, at Elizabeth, N. J., with water tube boilers. This will be the first vessel of the navy to be completely supplied with such boilers, although the Monterey has one-half her boilers of this type. The Chicago will also be supplied with them for one-half of her battery.

Officers of the Carnegie Steel Co., elected at the annual meeting, which was held a few days ago, are: H. C. Frick, chairman; John G. A. Leishman, president; L. C. Phipps, vice president and treasurer; F. T. F. Lovejoy, secretary. Two new members were added to the board of directors, these being Alexander R. Peacock, general sales agent, and C. M. Schwab, superintendent of the Homestead Steel Works.

A recent number of Engineering of London describes the twin-screw triple-expansion engines of the Spanish armored cruiser Empress Carlos V., which are of the inverted type with four cylinders—one high pressure, 52 inches in diameter, one intermediate, 77 $\frac{1}{2}$ inches, and two lower pressure, 82 $\frac{3}{4}$ inches in diameter, each adapted for a 45 $\frac{1}{2}$ inch stroke; at 100 revolutions they develop 18,500 horse power. The man

the limitation of cost be upon the aggregate and not upon the price of each boat. A number of boats should be given to one contractor to lessen the cost.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Jan. 18, 1896:

| | Wheat, bushels. | Corn, bushels. |
|----------------|-----------------|----------------|
| Chicago..... | 20,967,000 | 2,328,000 |
| Duluth..... | 9,021,000 | 40,000 |
| Milwaukee..... | 437,000 | |
| Detroit..... | 342,000 | 20,000 |
| Toledo..... | 845,000 | 253,000 |
| Buffalo..... | 2,834,000 | 108,000 |
| Total..... | 34,446,000 | 2,749,000 |

As compared with a week ago, the above figures show at the several points named a decrease of 126,000 bushels of wheat and an increase of 868,000 bushels of corn.

On Jan. 18, there was afloat at Chicago, 1,216,000 bushels of corn and 227,000 bushels of oats; at Buffalo, 259,000 bushels of wheat, 223,000 bushels of oats, and 304,000 bushels of barley; at Duluth, 512,000 bushels of wheat; and at Milwaukee 176,000 bushels of wheat and 120,000 bushels of oats.

"ROPER'S LAND AND MARINE ENGINES," BOUND IN MOROCCO WITH FLAP AND POCKET, WILL BE MAILED TO ANY ADDRESS FOR \$3.50 SENT TO THE MARINE REVIEW, CLEVELAND, O.

Around the Lakes.

Capt. John W. Moore of Cleveland announces that he will hereafter be associated in business with W. A. Hawgood.

Andrew Wehrle, Sr., who owned the greater part of Middle Bass island, Lake Erie, and who was interested in vessels running between Sandusky and the island, died in Sandusky a few days ago. He was sixty-three years of age.

F. P. Mills, who has been engaged at the mines of the Cleveland Iron Mining Co., and Cleveland-Cliffs Co. for a great number of years, has resigned and will remove to Colorado Springs. His successor has not as yet been appointed.

Capt. Samuel W. Gould, ex-assistant inspector of steam vessels, has again opened up his Cleveland school in which he prepares for examination candidates seeking licenses as pilots or masters. Capt. Gould's address is 265 Marcey avenue.

The marine engineers of Cleveland will hold their fifteenth annual social gathering at Merrill's hall on the evening of Feb. 10. Wm. H. Kennedy, L. W. Weeks and Henry T. McAuley are the members of the committee on arrangements.

A fog signal has been established near the light station at the entrance to Portage Lake ship-canal, Lake Superior, and will be in operation upon the opening of navigation next season. Blasts will be of three seconds duration separated by silent intervals of seventeen seconds.

David Vance of Milwaukee, F. P. Gordon of New York, John Mullen of Amherstburg, Ont., W. H. Singer of Duluth, L. C. Waldo of Detroit and Mr. Sillman of Martin, Sillman & Co., Cheboygan, Mich., were all in Cleveland looking after business matters within the past few days.

Officers of the Wilson Transit Co., Cleveland, for 1896, are the same as they were last year—Capt. Thomas Wilson, president, treasurer and general manager; R. McLauchlan, vice-president; H. D. Goulder, secretary. These officers with J. E. Upson, Geo. L. Quayle and W. D. Rees form the board of directors.

A very unique invitation to send for a complete catalogue of different specialties is sent out by the Buffalo Forge Co., Buffalo, N. Y., in the form of a pamphlet showing a French iron foundry in 1789. Any one connected with the foundry business will find it worth the trouble to send for one of these pamphlets.

Officers and directors of the Richardson Transportation Co. of Cleveland, elected a few days ago, are: President, H. J. Webb; vice president, Henry C. Ellison; secretary, treasurer and general manager, W. C. Richardson; directors, H. J. Webb, Henry C. Ellison, W. C. Richardson, F. W. Leek, H. D. Goulder, Thomas Jones and E. J. Jackson.

According to a report prepared by James F. Trowell of Milwaukee, the receipt of coal by lake at that port during 1895 aggregated 1,335,942 tons, of which 852,078 tons was anthracite and 483,864 tons bituminous. In 1894 the receipts footed up 1,236,959 tons, and of this amount 783,818 tons was anthracite and 453,141 tons bituminous.

Officers and directors of the Aurora Iron Mining Co., recently elected, are: President and treasurer, Charles F. Rand; secretary and general solicitor, Howard Morris; directors, Fred T. Gates, James C. Colgate, Charles L. Colby, Charles F. Rand of New York, Edwin H. Abbot of Cambridge, Mass., L. H. Severance of Cleveland and W. J. Olcott of Bessemer, Mich.

In accordance with plans to secure control of the Hamilton and Ludington mines, the Chapin Mining Co. increased its capital to \$1,000,000 at the annual meeting in Cleveland, recently. Directors and officers of the company are as they were last year. M. A. Hanna is president, L. C. Hanna vice-president, and A. M. Robbins, who is connected with the firm of M. A. Hanna & Co., is secretary.

The Thompson tug line of Port Huron, Mich., has recently bought the four Hursley tugs at Sault Ste Marie, making the Thompson tug line one of the largest on the lakes. In addition to the tugs Smith, Dimmick, Cheney and Mary Virginia, the wrecking tugs Brockway and Merrick will be stationed at the Sault the coming season, and the Ha'nes, Thompson and Boynton, together with a new tug now under construction, will remain at Port Huron. Mr. Thompson, the general manager, and Mr. Hursley, jr., who will be manager at the Sault, called on Cleveland owners this week.

The Ashtabula Tug Co., formed in Cleveland a few days ago, is made up mainly of vessel owners who control the Vessel Owners' Tug Co. of Cleveland, and will be managed by W. A. Collier, who has proven one of the most successful tug men on the lakes. It is more than probable that owners of harbor tugs now at Ashtabula will be compelled to sell out to the new concern, as stockholders in the new company control the great bulk of vessel business at Ashtabula. Officers of the new company are: President, C. E. Grover; vice president, D. R. Hanna; secretary and treasurer, W. A. Collier. Among the stockholders are Col. James Pickands, H. G. Dalton, M. A. Bradley, H. H. Brown, D. R. Hanna, J. C. Gilchrist and W. D. Rees.

Big Dry Docks.

After a great deal of trouble with contractors it is now announced that the big dry dock which the government is building at the Brooklyn navy yard will be finished by July 4 of this year. The work of constructing this dock was begun early in 1893. It will cost about \$1,000,000 and will be the largest and finest dock on this continent. From end to end it is 720 feet long measured at the top, and 630 feet long measured on the bottom. Its top width is 151 feet and floor width 70 feet. The width at entrance is 108 feet, and the draught over the sill 29 feet at ordinary high-water mark. Government docks now in use in the United States include Brooklyn dock No. 2 of these dimensions: Length at top, 500 feet; length at bottom, 460 feet; breadth of entrance, 85 feet; draught over sill 26 feet. The League island and Norfolk No. 2, also in use, are of similar dimensions. The Mare island dock is 513 feet long. There are in course of construction the Puget Sound, Port Royal, and Brooklyn (No. 3) docks. The dock at Puget Sound will be slightly smaller than the new Brooklyn dock, and the Port Royal dock is smaller than either, being only 496 feet long. The largest dock in the world is the Langton dry dock in London which is 951 feet long. At Belfast, in Ireland, there is a large new dock over 800 feet long, and there are some big docks in France. The largest dock on this side of the water at present is the Halifax dock, which is 600 feet long and has a draught over the sill of 30 feet.

The Inland Lloyd's Register.

Whatever may be said to the contrary, it is a fact, nevertheless, that the underwriters who met in Detroit while the Lake Carriers were in session had a great deal of trouble over the selection of a chief inspector for the preparation of the Inland Lloyd's register. Capt. Daniel McLeod of Cleveland, who has had charge of the register for a great number of years, was opposed by some of the general agents, notably those of Chicago, on the claim that he was partial to Cleveland vessel owners. Capt. F. D. Herriman of Chicago and Capt. A. R. Manning of Cleveland were both supported for the position by some of the agents, but the main difficulty in both cases was that these men demanded salaries much higher than has been paid in the past for the work. The final selection of Capt. McLeod was without any special effort on his part, but the fact remains that there is dissatisfaction about the register work, and that the underwriters have undertaken no changes in methods that promise relief from the dissensions of past years. Capt. McLeod is to go ahead with the preparation of a register, but he will be governed largely in valuations and ratings by a board made up of representatives of the several general agencies. The underwriters expect to meet early in March to fix hull and cargo tariffs, but the matter of a general agreement between them on this score is still an open question.

Miscellaneous Mention.

Several years ago the Buffalo Forge Co. supplied the Tacoma Mill Co., of Tacoma, Wash., with the largest dry kiln that has ever been placed in the northwest. A few days ago the Buffalo company received a letter from the owners of the lumber dryer saying that it has given satisfaction from the beginning and they would recommend machinery of this kind to anyone in need of it.

A delegation of vessel masters from Cleveland, representing the ore companies and railway companies doing business at Ashtabula, will probably accompany citizens of Ashtabula on their trip to Washington in behalf of harbor improvements at that point. The river and harbor committee will hear delegations of this kind until March 1, after that date the committee will listen to senators and representatives only.

The Seamen's Union has a bill before congress that relates specially to the lakes. It was introduced by Representative Woodman of Chicago and provides for a certain number of sailors on vessels of various sizes. On sailing vessels and tow barges of 150 to 200 tons, the number of "competent sailors" in addition to officers shall be, according to this measure, no less than three; vessels of 200 to 350 tons, no less than four; from 350 to 500 tons, five; from 500 to 1,000 tons, six; from 1,000 to 1,500 tons, seven; over 1,500 tons, one additional sailor. The bill provides that steam vessels shall carry in addition to their officers and wheelmen (who shall be practical sailors) a crew of not less than two competent sailors for every vessel of 150 to 300 tons; from 300 to 500 tons, three; 500 to 1,000 tons, four; from 1,000 to 1,500 tons, five; from 1,500 to 2,000 tons, six; and one additional sailor for every 1,000 tons or fraction thereof. All vessels of 300 tons or over shall carry a captain and two mates. The bill provides for an infraction of the act a penalty of from \$25 to \$100 for each sailor less than the required number.

AN EXCELLENT LIBRARY FOR A MARINE ENGINEER, CHEAP—KEY TO ENGINEERING; WHAT AN ENGINEER SHOULD KNOW ABOUT ELECTRICITY; ENGINEERS' CATECHISM. ANY ONE OF THESE ARE WORTH A DOLLAR, BUT ALL THREE CAN BE HAD FOR \$1. SEND TO THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O. MONEY REFUNDED IF NOT SATISFACTORY.

Ship Yard Matters.

A Buffalo correspondent referring to the contract secured by Lewis Nixon of the Crescent ship yard, Elizabeth, N. J., for the thirteen steel canal boats that are to be added to the fleet of the Cleveland-New York line, says that enough is known of the bids to make it quite sure that the coast concern took the three steamers for about \$41,000 and the ten consortships for about \$75,000. The Union Dry Dock Co. of Buffalo was the second lowest bidder. The whole fleet is to be finished and in New York by May 1. The Union company has its steel steamer for the Union Steamboat Co. laid down and the bottom nearly plated, but no frames are up. The Connors' steam yacht is about ready to launch. The Owego is just out of dock with \$15,000 worth of new plates on her bottom, and the Russia is receiving \$10,000 worth of repairs to her bow, on account of the collision with the Britannic. The J. W. Moore and the Maytham are waiting for bottom repairs. Outside the dock the Washburn is also getting a heavy job of repairs and the Sagamore and barge 109 are to go through the same process. The steamers for Chautauqua lake and Hemlock lake are not laid down yet. The yard has a force of 500 men employed.

Capt. Alex McDougall says that he is still figuring on some additional work for the ship yard of the American Steel Barge Co. at West Superior, and may shortly close a contract for one or two vessels in addition to the four which he has under way. The West Superior yard has more room for new work than any of the other lake plants.

The Chicago Ship Building Co. has had under consideration for some time past the question of erecting a plant at South Chicago for the construction of machinery, and they will probably go ahead with the work during the coming summer, but as yet no definite arrangements have been made.

Scotch Versus Belleville Boilers.

Editor MARINE REVIEW: My old and esteemed friend, Mr. Miers Coryell, sends you a communication on the subject of the installation of Belleville boilers in eight of the cruisers of the British navy, and thinks this answers in a "peremptory way the passionate attacks on these boilers by partisans of the cylindrical type." There are always two sides to a case, and having heard one of them, permit me to give your readers the reverse side. In the first place, the navies of the world are not the places to look for the most advanced or economical ideas in regard to boilers. There is a "commercial side" to this question of boilers which can not be ignored in mercantile practice, but which is rarely taken into account where a government has to "foot the bills."

To illustrate: The London, Brighton & South Coast Railway had two steamers of the same size, viz, the Seaford and Tamise, running between New Haven and Dieppe, both very fast and both making the same time, viz, 3¼ hours in a run of sixty-five miles. The Seaford was fitted with Scotch cylindrical boilers with Serpentine ribbed tubes, and burned 27½ tons of coal on the round trip, and the Tamise was fitted with Belleville boilers burning 37½ tons of coal per round trip, a difference of about 36 per cent. in fuel; but besides this, the Belleville boilers take up about 43 per cent. more space, and space is a "commodity" that is worth something on board ship.

The Seaford was sunk some months ago by a collision with a freight steamer belonging to the same line, and it became necessary for the railway company to build another steamer to take her place. Are they putting Belleville boilers in this new steamer? Not by a large majority; they have "been there"; in point of fact, they are "there" now in the Tamise, and doubtless wish they were not. Like sensible men who don't want to squander their money and fill up their ship with machinery, they are putting Scotch cylindrical boilers in her, fitted with Serpentine ribbed tubes; and possibly to emphasize and perpetuate the great satisfaction the sunken steamer gave the company, they are naming the new one also the Seaford.

"Facts are stubborn things," and such facts as I have named in this rejoinder to Mr. Coryell will, I trust, be of service to some of your readers interested in steamers, who may not as yet have fully made up their minds which type of boiler is, on the whole, the most desirable and the most economical.

C. W. WHITNEY.

Manhattan Life Building, New York, Jan. 15, 1896.

There is nothing small about Congressman Charles W. Woodman of Illinois. He has introduced in the house a bill providing for an appropriation of \$100,000,000 for coast defenses. He names Buffalo, Cleveland, Toledo, Detroit, Sault Ste Marie and Duluth as lake cities that he would have share in the benefits of the proposed big appropriation.

An effort will be made to have an item incorporated in the river and harbor bill providing for the removal of Starve island reef, Lake Erie. With this reef removed and a light on the southern end of Put-in-Bay island, it is thought that the south passage between the Detroit river and Ohio ports on Lake Erie would be far less dangerous than it is at present.

"Cisco Chasers."

Away back in the days when Capt. Wm. Mack and James Corrigan of Cleveland were sailing on Lake Ontario the skippers of small vessels on that lake were commonly referred to as "cisco chasers." President Brown of the Lake Carriers' Association revived the term at the meeting in Detroit last week, when he said he would refer to the committee on "cisco chasers" a resolution offering to the United States government the use of all vessels in the association in event of war with Great Britain. The cisco is a small fish like a herring that is peculiar to Lake Ontario. Fishermen in and around Oswego occasionally found a small craft to sail in the coasting trade and when graduated from the fishing business were referred to by captains of larger vessels as cisco chasers.

During the closing hours of the Lake Carriers' meeting, when unimportant matters were attended by a little amusement, Capt. Mack read a clipping from a Toronto paper in which it was stated that vessel owners of Canada had offered their vessels to the dominion government, to be used in event of war with the United States. In a spirit of fun Capt. Mack proposed that the Lake Carriers offer their vessels to Uncle Sam, and President Brown turned the laugh on him by immediately referring the resolution to the "committee on cisco chasers."

Annual Meeting of the Ship Masters.

Representatives of different lodges of the Ship Master's Association from lake cities, forming the grand lodge of the organization, are now in session in Washington. A telegram, Thursday morning, from Secretary W. A. Collier of Cleveland outlines the first day's proceedings. Mr. Collier says:

"Resolutions condemning the construction of a bridge across the Detroit river in accordance with bills now before the senate and house of representatives were first in order. Representative John B. Corliss of Detroit, who introduced the bridge bill in the house, attended an informal meeting of the organization and was reminded, in a pleasant way, of his promise a year ago to uphold shipping interests of the lakes in all legislative matters. Although the author of the house bridge bill, he said that he would oppose any bridge which he considered an obstruction to navigation and added that he hoped he would live to see the Detroit river and its commerce extended to the Atlantic.

"Resolutions opposing any change in the navigation laws for the lakes were also adopted. This was prompted by a bill proposing a change in fog signals, which has been introduced by Representative Payne. Towing of rafts through narrow channels without restrictions was also the subject of resolutions. The position of vessel masters on this question is, of course, fully understood, but it was thought advisable not to allow an annual meeting to pass without an expression of opinion on the subject. Another resolution favored regulations for the navigation of the Sault river, to be enforced by the revenue cutter service. Copies of all resolutions will be submitted to senators and representatives and to heads of government departments most interested in them. A pleasing feature of the informal meeting Wednesday afternoon was the presentation of a valuable piece of jewelry to Past Grand President Clark, in recognition of his efforts in behalf of the organization. The ladies were present at this session. Grand President Benham of Cleveland made the presentation speech. A visit was paid to the grand harbor of the American Pilots' Association, who are also in session here, and matters of mutual interest were discussed. The masters also called in a body at the office of the revenue cutter service and paid their respects to the supervising inspector-general of steam vessels, James A. Dumont, and Mr. E. T. Chamberlain, United States commissioner of navigation. Mr. Chamberlain was informed of the objection to the Payne bill, which proposes a change in fog signals. Before the close of the convention heads of departments will also be called on as far as it is possible to do so."

With the National Association of Marine Engineers, pilots' organization of the coast, Ship Masters' Association of the lakes and the United States board of supervising inspectors of steam vessels all holding annual meetings in Washington, the shipping interests of the country are well represented at the capitol this week. A report of the first days' proceedings of the Ship Masters' Association appears elsewhere in their issue, but as the proceedings of the engineers are of a semi-secret nature it is impossible to obtain as yet anything regarding their action on the different subjects which they have under consideration. Their main work, however, aside from business relating to the beneficial features of their organization, will be to urge upon representatives in congress the necessity and justice in passing the bill relating to the employment of none but citizens of the United States as engineers on American vessels. This bill was introduced in the senate by Mr. Squire of Oregon, and a duplicate of it in the house is fathered by Representative Hopkins of Illinois. It is the outgrowth of the refusal of ex-Secretary Foster of the treasury department to recognize engineers as officers of steam vessels in the well-known case of the steamers Paris and New York, when these vessels were admitted to American register.



DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

| Class. | Number. | Gross Tonnage. |
|----------------------|---------|----------------|
| Steam vessels..... | 1,755 | 857,735.00 |
| Sailing vessels..... | 1,100 | 300,642.00 |
| Unrigged..... | 487 | 83,082.00 |
| Total..... | 3,342 | 1,241,459.00 |

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

| Year ending June 30, | Number. | Net Tonnage. |
|----------------------|---------|--------------|
| 1891..... | 204 | 111,856.45 |
| " " " 1892..... | 169 | 45,168.98 |
| " " " 1893..... | 175 | 99,271.24 |
| " " " 1894..... | 106 | 41,984.61 |
| " " " 1895..... | 93 | 36,353.00 |
| Total..... | 747 | 334,634.28 |

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.
(From Official Reports of Canal Officers.)

| | St. Mary's Falls Canal. | | | Suez Canal. | | |
|---------------------|-------------------------|-----------|------------|-------------|-----------|-----------|
| | 1894. | 1893. | 1892. | 1894. | 1893. | 1892. |
| No. vessel pass'ges | 14,491 | 12,008 | 12,580 | 3,352 | 3,341 | 3,559 |
| T'n'ge, net registd | 13,110,366 | 9,849,754 | 10,647,203 | 8,039,106 | 7,659,068 | 7,712,028 |
| Days of Navigat'n | 234 | 219 | 223 | 365 | 365 | 365 |

Entered at Cleveland Post Office as Second-class Mail Matter.

JUST NOW the vessel owners of the lakes, in their fight against the Detroit river bridge, are badly in need of statistics, absolutely reliable, regarding the traffic of the Detroit river, and yet many of them, on account of a little inconvenience to themselves, stand in their own light in this matter. From what is known of the Sault canal traffic, as well as the general movement of iron ore, grain, coal and lumber throughout the lakes, it is certain that the commerce of the Detroit river is more than one-fourth, and probably fully one-third, of the entire freight tonnage of the railways of the country. It is also quite certain that the cost per ton per mile of moving freight that passes the city of Detroit is not more than one-tenth of the average cost on all railways of the country; or in other words the average cost of moving freight that passes the city of Detroit by water is about $8\frac{1}{2}$ tenths of a mill per ton per mile, against $8\frac{1}{2}$ full mills for the railways throughout the country. But these figures, as regards the lake traffic, no matter how honest the convictions of vessel owners may be regarding them, are not backed up by official returns, on account of defects in customs laws that act against a complete compilation of data on the subject. Notwithstanding this condition, and the great demand for reliable figures covering the whole movement of freight on the lakes, there was adopted, at the annual meeting of the Lake Carriers' Association in Detroit last week, a resolution calling for the repeal of all laws requiring vessel owners to make reports of any kind regarding cargoes to collectors of customs or to engineers in charge of river and harbor improvements. The resolution was introduced by Capt. Alex McDougall of Duluth, and was undoubtedly prompted by the action of the United States engineer at Duluth last season, in requiring vessels entering the ports of Duluth and Superior to make reports of their cargoes according to law. This requirement and the practice of reporting to customs officers are matters of some inconvenience to vessel masters, but if questions like the Detroit river bridge are to be met by vessel owners, and if the lakes are to receive their share of appropriations from the government for river and harbor improvements, aids to navigation, etc., their demands must be backed up by statistics that can not be questioned. Guess-work and estimates will not do.

FORTUNATELY the lakes will be in no way concerned in future deliberations of the International Marine Conference which is to reconvene

shortly upon a call from the secretary of state. The White act of a year ago gives the lakes special rules for the prevention of collisions, and as all lake interests are satisfied with these rules, there need be no worry over anything that may be done by the International Marine Conference. It will be remembered that the conference of 1889 agreed on certain rules of the road to prevent collisions at sea, which rules, as far as sea-going vessels are concerned, have been authorized by law by the United States and by every other power taking part in their construction, except Great Britain, the English seamen objecting to some of the fog signals agreed on. For a long time the matter has been held in abeyance, owing to the slow movements of Great Britain and her refusal either to agree to rules or suggest changes. The matter is to be brought before parliament by the London chamber of commerce at once, and it is expected that the full approval of all the nations will be given to the rules. In case, however, the British government should suggest further amendments to the rules, the reconvening of the conference is authorized by a bill now before congress, and which will very probably be passed, so that the amendments may be speedily acted upon.

GOVERNOR MORTON of New York makes the matter of state canal improvements a feature of his message. He says that the recent experiments with electric motors for canal boat propulsion, made at the western end of the Erie canal, were so successful in character and results as to lead to the belief that when the system is applied to the entire canal it will increase its traffic capacity by at least 35 per cent. The law providing for an issue of \$9,000,000 of bonds for canal improvements, which was approved at the last state election, requires the legislature annually to impose a tax of thirteenth-hundredth mills upon each dollar of valuation of real and personal property in the state subject to taxation, the proceeds of which, after paying the interest due upon the bonds, shall be invested by the comptroller, under the direction of the commissioners of the canal fund, and together with the interest arising therefrom shall be devoted to the sinking fund created for this purpose.

IN A conversation, a few days ago, relative to the action of the Lake Carriers' Association on the subject of a memorial to the late Gen. Poe at the St. Mary's Falls canal, Mr. M. A. Hanna of Cleveland, who is a leading member of the memorial committee, expressed the opinion that it will be impossible to collect \$10,000, the amount thought necessary for the erection of a statue. Mr. Hanna was not at the Detroit meeting, but he says he will assist the committee as far as possible in Cleveland, as he promised Gen. Alger that he would do so. He is not, however, in favor of trying to collect a fund sufficient to erect a statue and fail in the attempt. There are other vessel owners who agree with Mr. Hanna. It is fortunate, therefore, that the instructions given to the committee provide for a statue "or other suitable memorial."

FEW PEOPLE realize the immense power that is required to propel a vessel of any kind when a speed above 20 knots is required. Take, for instance, the British torpedo boat chasers, which are mere racing machines, even from a naval point of view. The most perfect specimens of vessels of this class, which have attained 30 knots speed, carry sixty tons of coal, which is full one quarter of their entire sea-going displacement. They burn $3\frac{1}{2}$ tons of coal per hour. To attain the three knots over twenty-seven, which is the highest speed of ordinary torpedo boats, it was necessary to increase the fuel expenditure full 50 per cent.

ACCORDING to the annual report of the New York state superintendent of public works the whole number of tons carried upon the canals of the state during the season of 1895 was 3,500,314 tons, of which 2,327,481 tons was in transit toward tidewater and 1,172,835 tons was moved westward. Of these amounts 1,762,663 tons were through freight and 1,797,651 tons were way freight. The amounts carried by the several canals were as follows: Erie canal, 2,356,084 tons; Champlain canal, 966,335 tons; Oswego canal, 64,691 tons; Black River canal, 64,154 tons; Cayuga and Seneca canal, 49,050 tons; total, 3,500,314 tons.

SENATOR BRICE's efforts to settle, if possible, through investigations to be made by competent engineers, the questions of regulating lake levels by means of dams is undoubtedly prompted by an honest intention of serving the entire lake shipping interests in this matter. Mr. Brice is directly interested in this question, however, as he owns the Duluth South Shore & Atlantic Ry. and is a leading stockholder in Ohio lines that are gradually coming into a heavy business from terminals on Lake Erie.

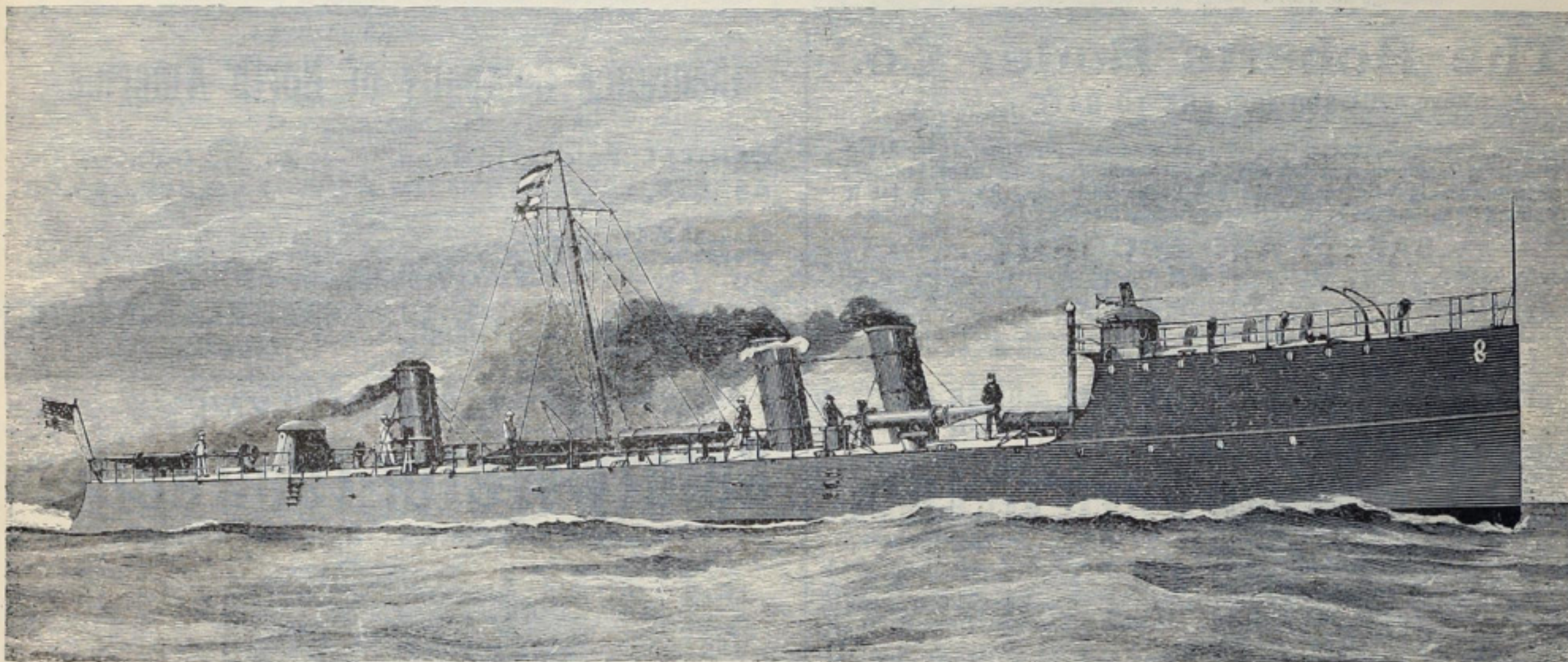
IT IS difficult to understand that high or low water in connecting channels of the lakes should be charged to such a great extent to heavy rainfall or to the absence of rain. It is important to note in this connection, however, that an inch of rain falling upon an area of one square mile is equivalent to nearly 17,500,000 gallons, weighing 145,250,000 pounds, or 64,844 tons.

Crowded Ship Yards.

The British consul general at Hamburg reports to his government that the German ship building yards are receiving so many orders for the construction of mercantile vessels that they are now able to accept only a small proportion of the later ones. The orders in hand extend into 1897. The principal orders come from Hamburg and Bremen firms, such as the North German Lloyd, East African Royal Mail line and the Kosmos line. The North German Lloyd Co. has placed with the Vulcan Works at Stettin, and the Schichau Works at Dantzig, orders for the construction of two immense steamships, representing a capital of about \$9,500,000. The ship building yard at Flensburg is busy on three large twin-screw steamships for Hamburg firms and one mail steamship for the Kosmos line. The Germania Works at Kiel is at present almost entirely occupied with the building of war vessels, and is not able to under-

Latest United States Torpedo Boats.

It is probably not generally known that the three United States torpedo boats, Nos. 6, 7 and 8,—one of which is being built by the Moran Bros. Co. of Seattle, Wash., and the other two by the Herreshoff Mfg. Co. of Bristol, R. I.—will be the largest vessels of their kind in the world. This has reference, of course, to torpedo boats pure and simple. These vessels will not be as formidable as the torpedo boat chasers but they will in many respects closely approach this later type of war vessel. Their cost, including ordinance and outfit complete, must not exceed \$175,000 each. The hulls will be of steel, 170 feet between perpendiculars, 17 feet beam on water line, and 5 feet 6 inches normal draft. Fifty per cent. of the total displacement in these crafts is absorbed by boilers, engines and appurtenances. In the big commerce destroyers like the Columbia and Minneapolis, not more than half this percentage of dis-



ONE OF THE LATEST UNITED STATES TORPEDO BOATS.

take orders for merchant ships. As a result of the current activity in German yards, several profitable orders have been sent to the ship builders of the United Kingdom.

Trade Notes.

Serve ribbed tubes are either now in use or are being fitted in 104 steamers.

The Berlin Iron Bridge Co., of East Berlin, Conn., has just completed for the Ansonia Brass & Copper Co., of Ansonia, Conn., a new boiler house 65 feet wide and 142 feet long. The side walls are of brick and the roof is entirely of steel, covered with the Berlin Company's patent anti-condensed corrugation steel.

During the year 1895, James Howden & Co. of Glasgow entered into contracts in various parts of the world for the application of their system of hot draft to 105 steam vessels of 278,500 horse power. This is the draft system for which the Detroit Dry Dock Co. holds the agency in this country.

New Officers Among Engineers.

M. E. B. A. No. 87, Detroit, Mich.: Past president, W. McKittrick; president, Geo. B. Milne; vice-president, Michael Toner; secretary and treasurer, John J. Stevens; corresponding secretary, Warren Welch; chaplain, Richard Langford; door keeper, Edward Whipple; conductor, Emil Mercier; delegate to national convention, Scott Pratt.

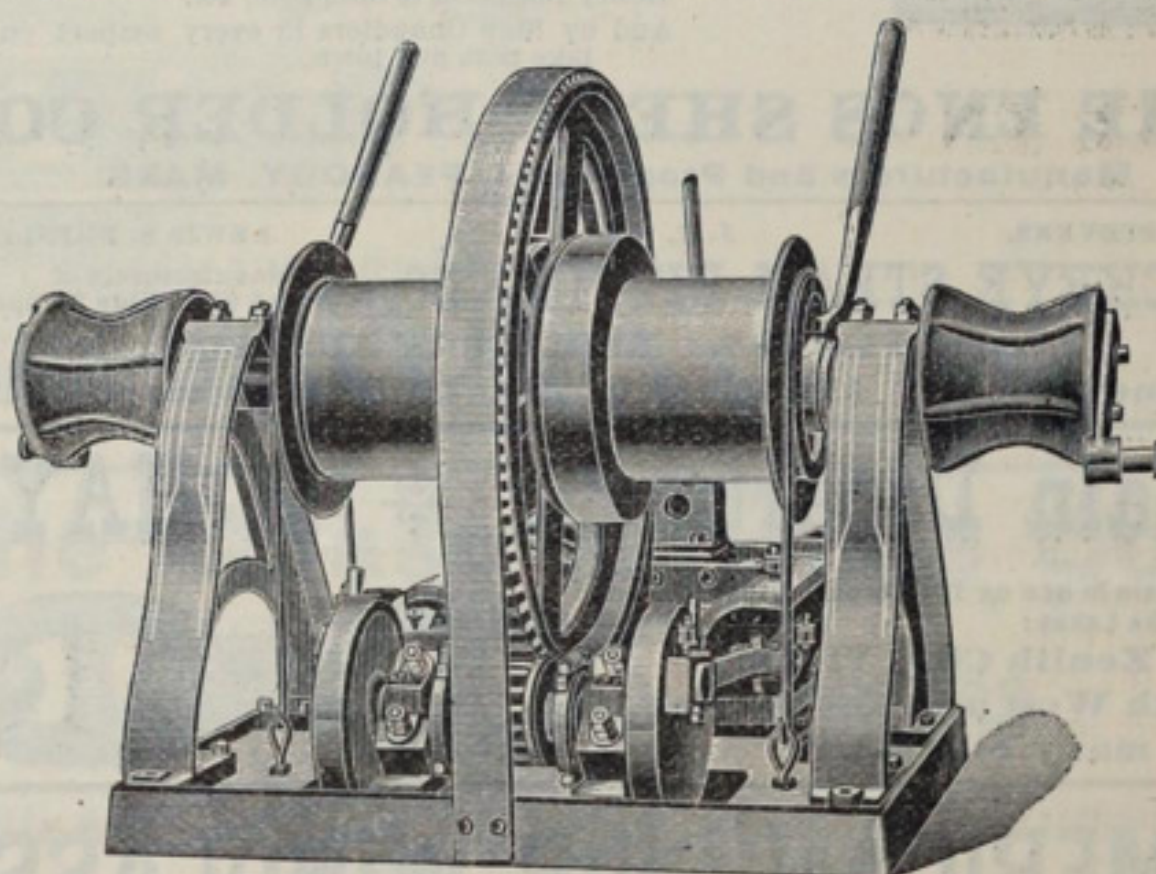
In the list of officers of the M. E. B. A. No. 92, Saginaw, Mich., printed last week, the corresponding secretary's name should have been Henry E. McArthur instead of McSothorn. His address is 17 McCormick Bldg.

Cleveland will soon have a board of harbor commissioners if all goes well. Other lake cities not provided with such valuable adjuncts may get an idea from the proposed plan. A council resolution on the subject provides that the board shall consist of four members, to be appointed by the sinking fund commissioners and the mayor. The terms of the members originally appointed shall expire in eight, six, four and two years respectively, a new member to be appointed every two years. The board shall meet once a week, and the members shall receive \$5 per meeting. The bill provides for a superintendent to have charge of bridges and the policing of harbors, or dredging and other improvements. He shall appoint bridge tenders and similar employees, subject to the authority of the council.

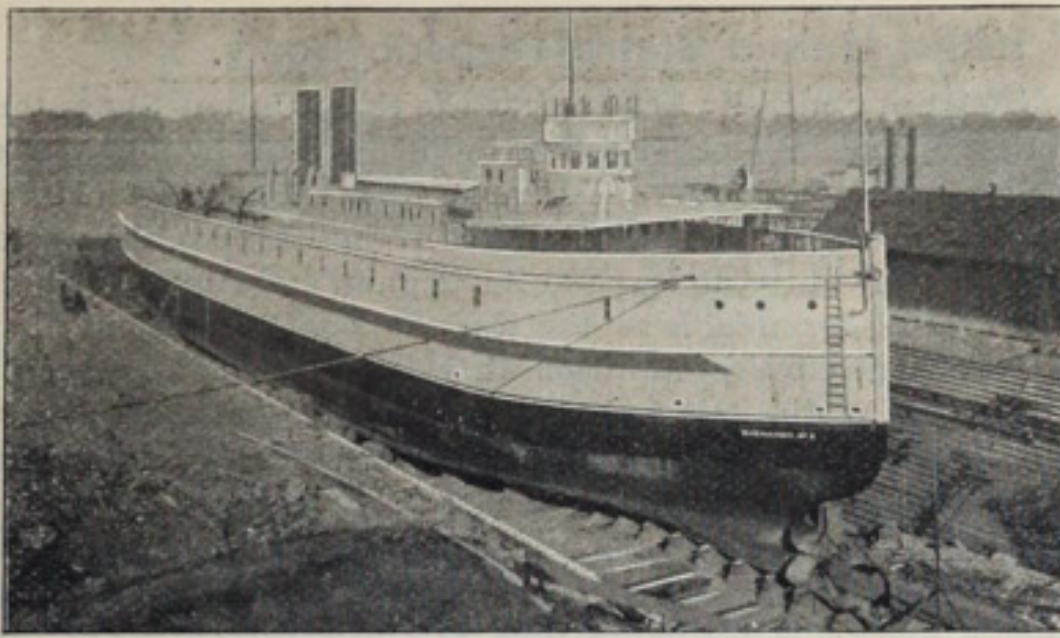
placement is given to boilers and machinery. The triple expansion engines of these vessels, which will be furnished with steam at high power, probably from water tube boilers in all cases, are expected to develop 3,200 horse power at 395 turns, and to drive the boats at a speed of 26 knots. The engraving is from the Scientific American.

Jackson & Church's Double Spool Friction Hoist.

The illustration shows a well-built and powerful double spool friction hoist such as is successfully used on freight boats and docks where one or two lifts are worked at one time. When wanted they put friction spools in place of gypsies on ends of shaft, working four lifts with one set of engines. They are built in 6 sizes, being six in. by 6 in., 6 in. by 7 in., 7 in. by 8 in., 7 in. by 9 in., 8 in. by 9 in. and 8 in. by 10 in. cylinders,



or larger if required. This concern also builds one of the best deck hoists on the lakes, having between 200 and 300 in use on fresh and salt water. They also build a friction dock hoist used in coal yards and pile driving, and twin engines for dredges, etc. A vest pocket memorandum book will be sent to any one writing the manufacturers of these hoists at Saginaw, Mich.



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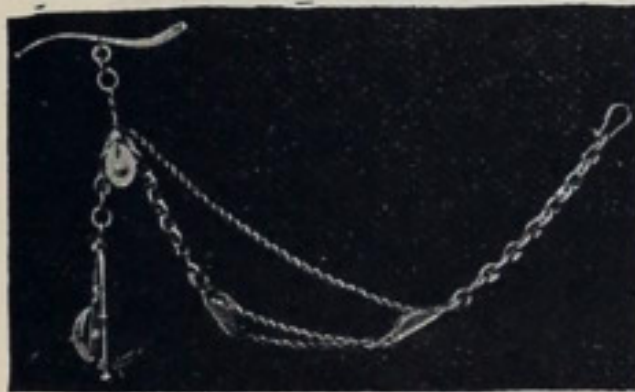
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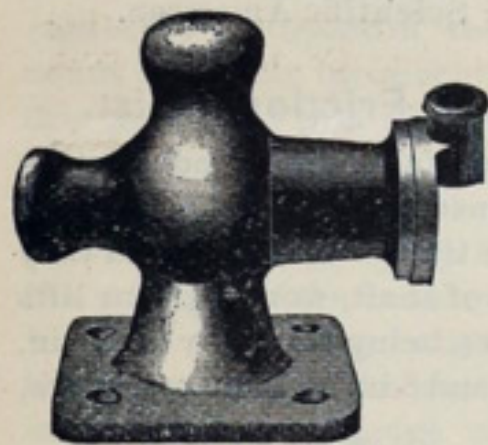
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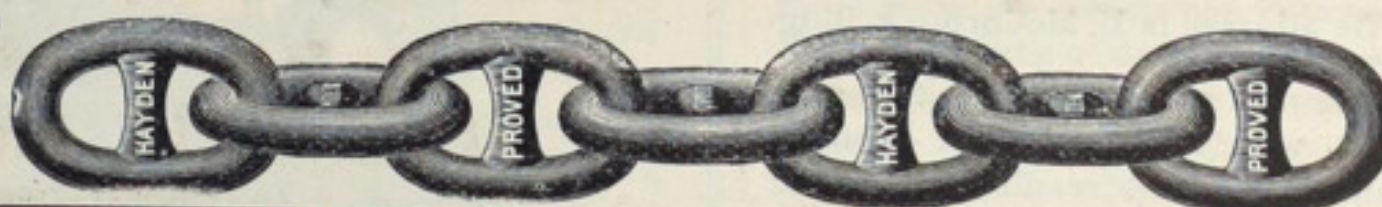
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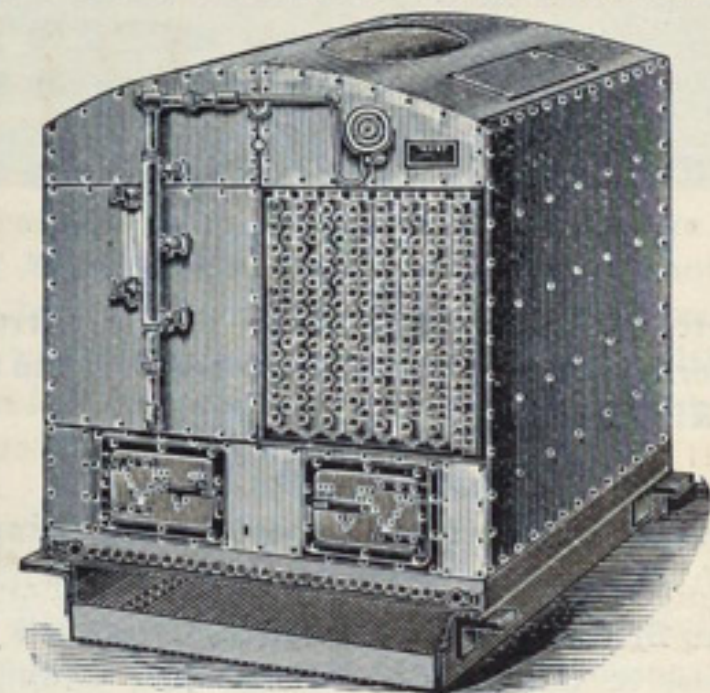
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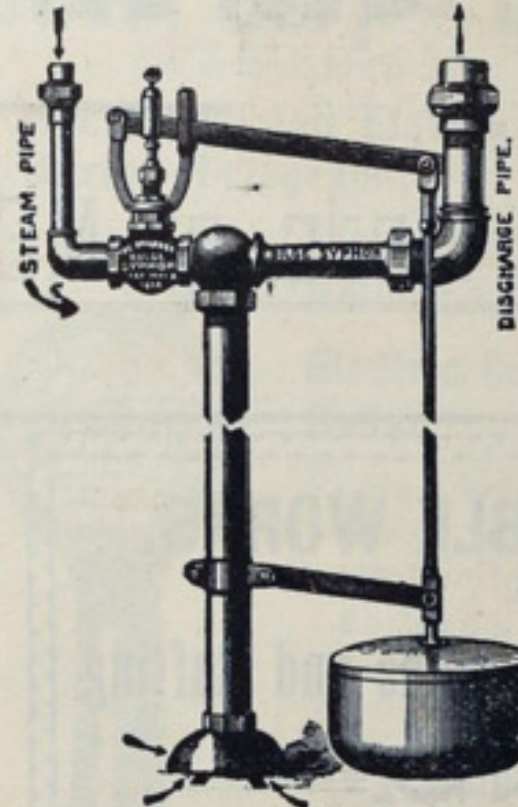
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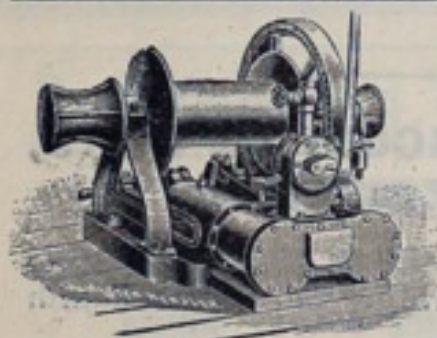
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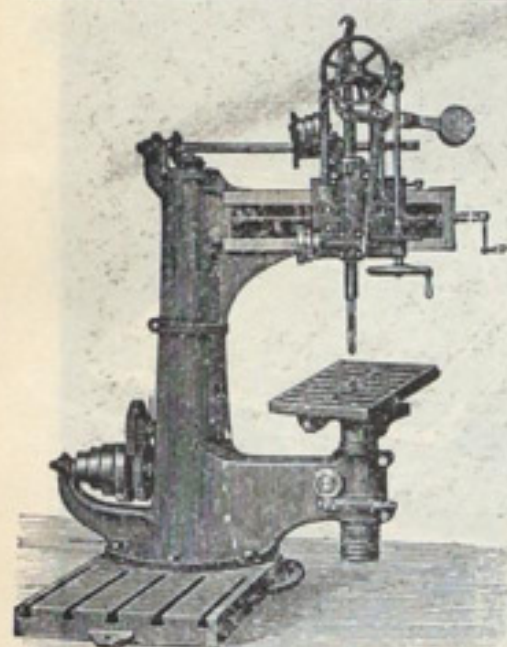
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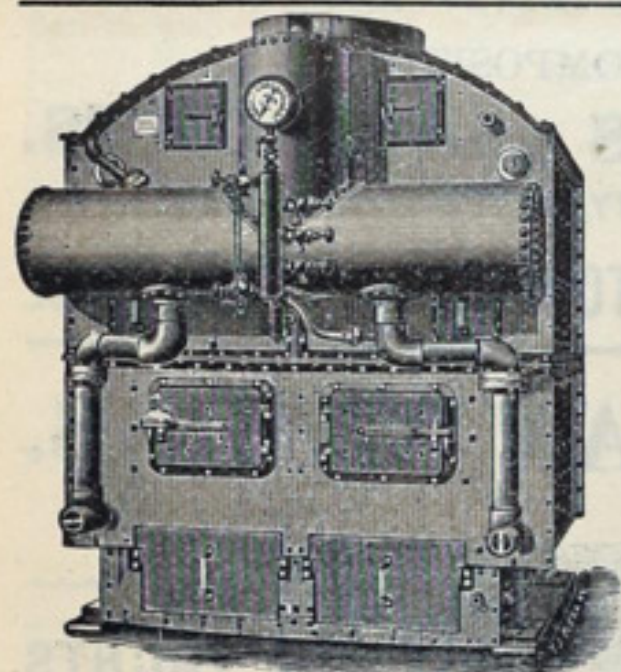
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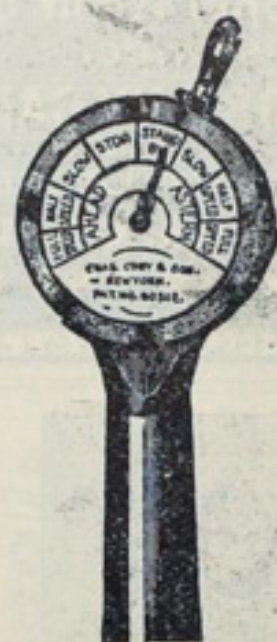
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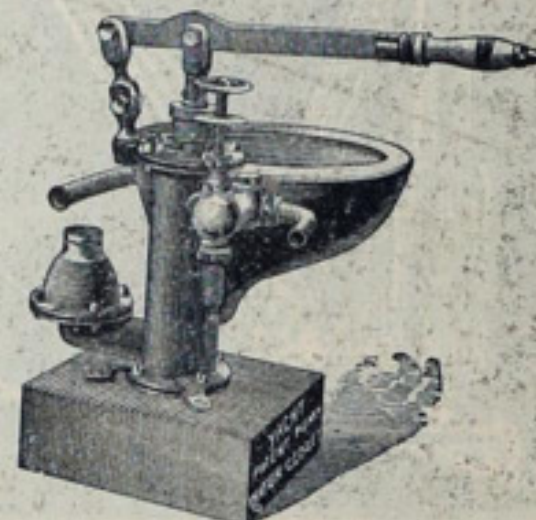


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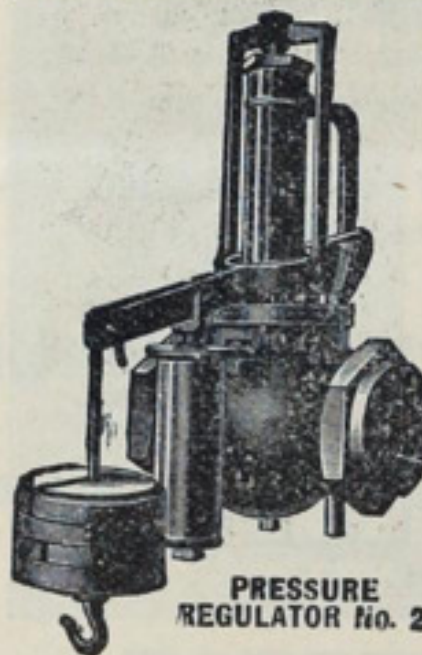
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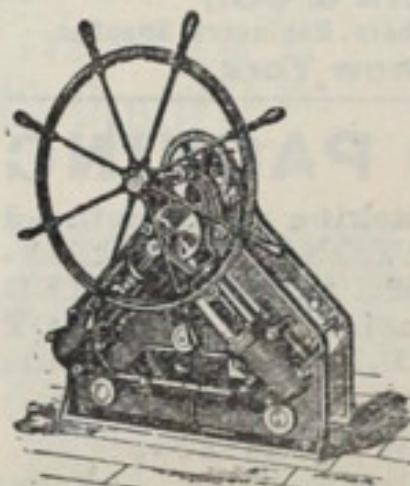
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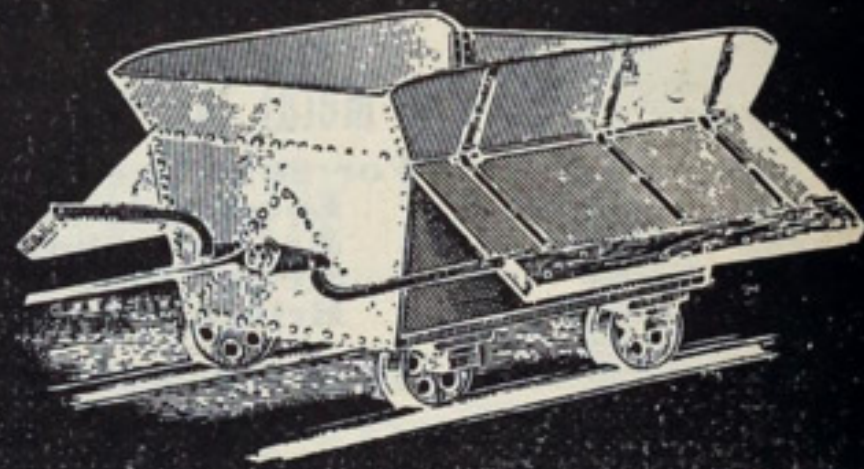
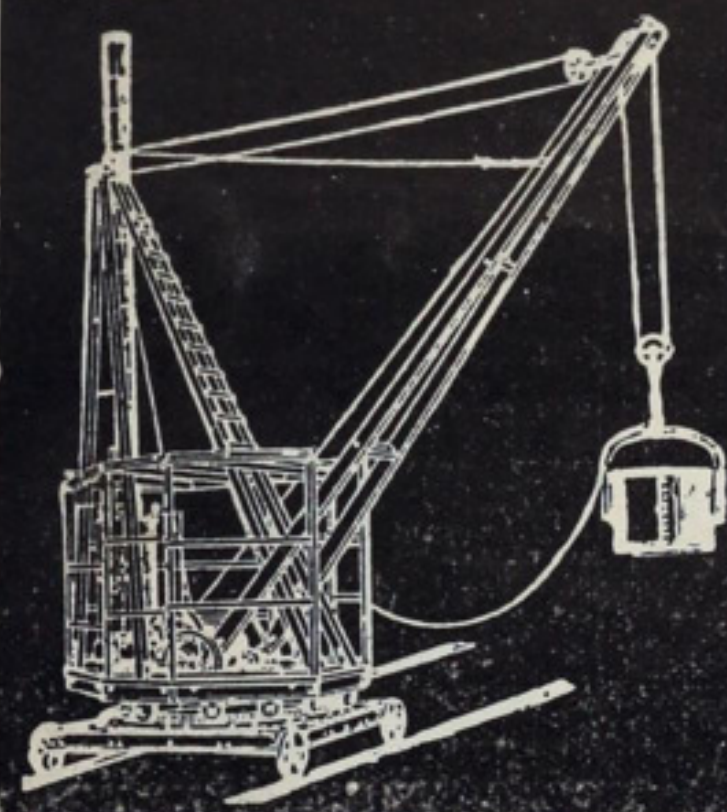
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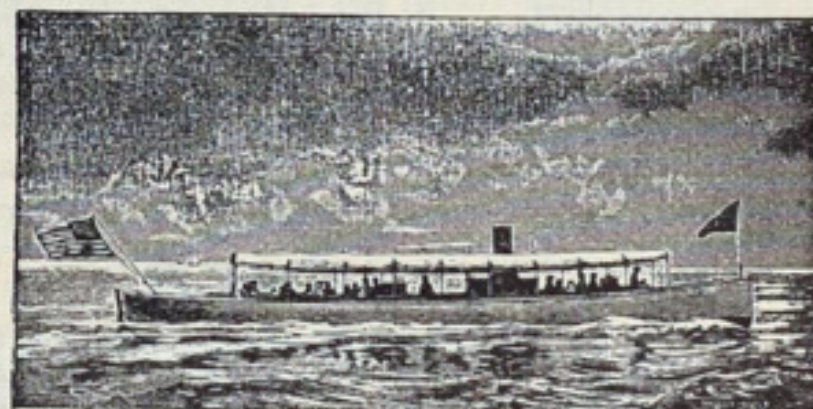
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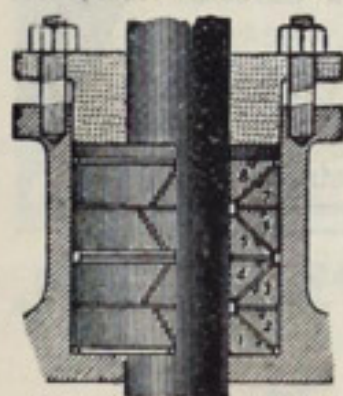
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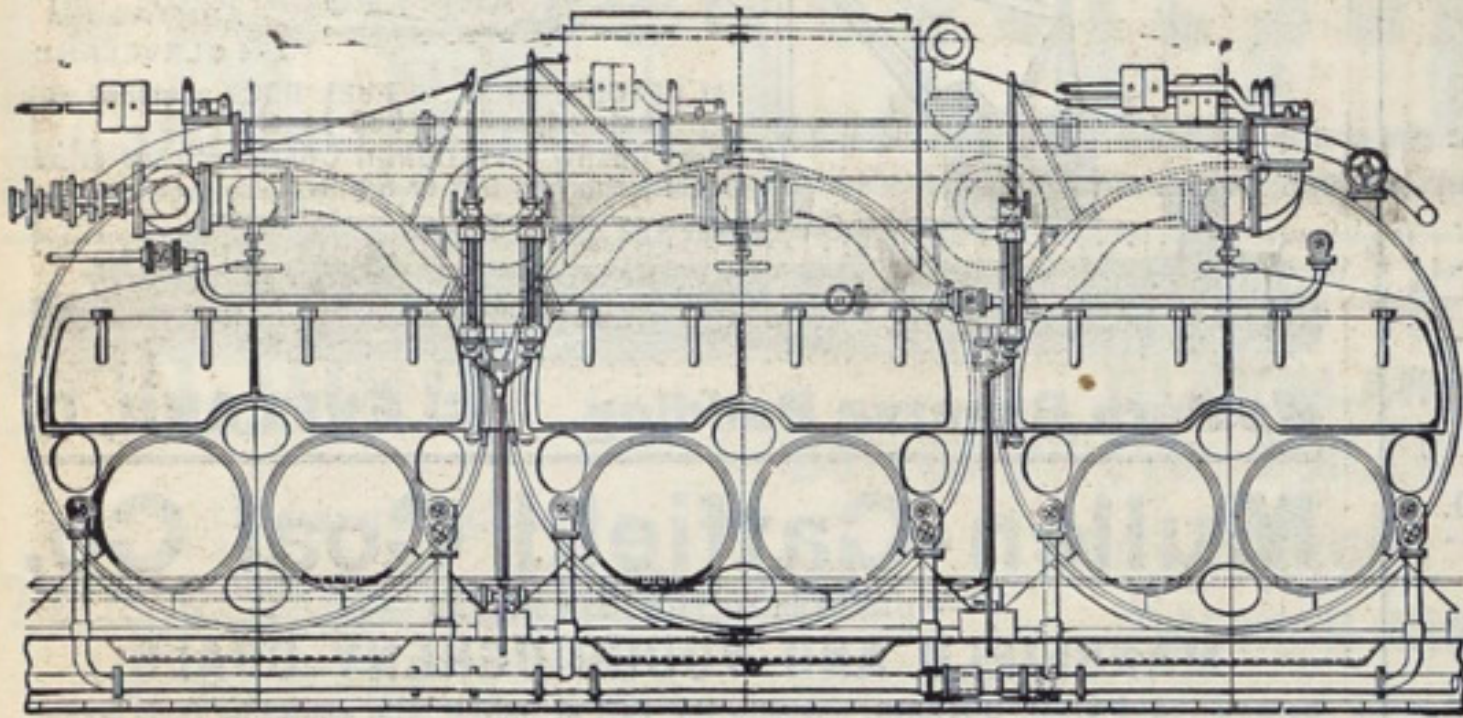
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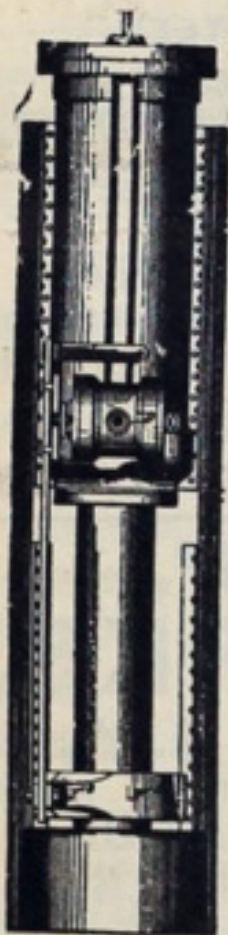
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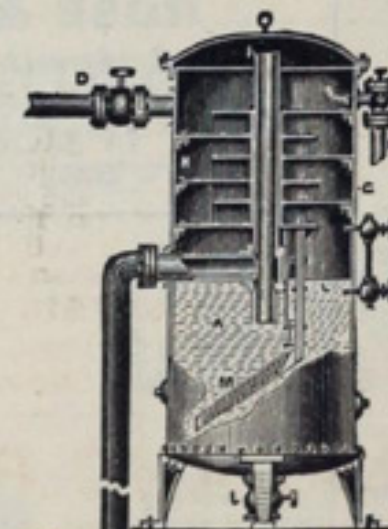
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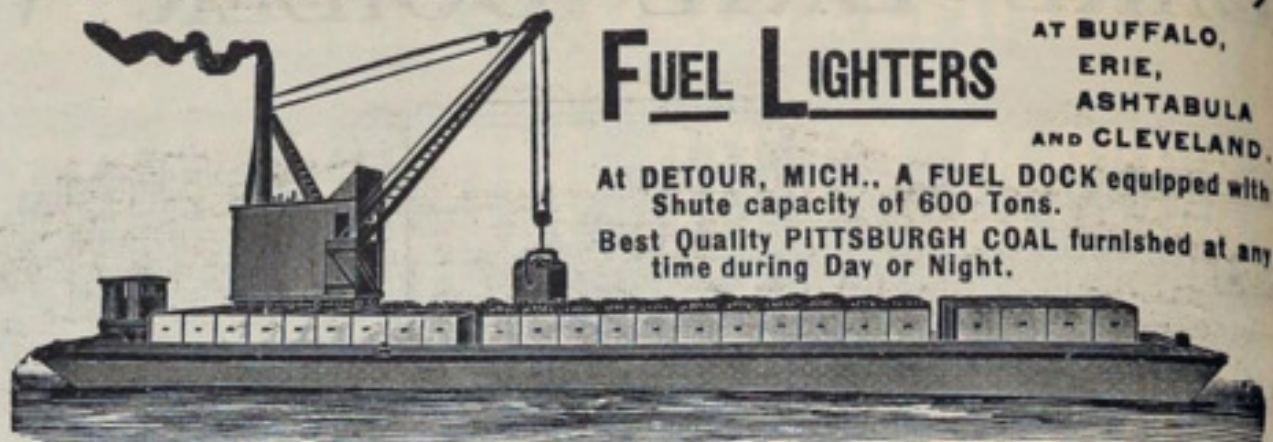
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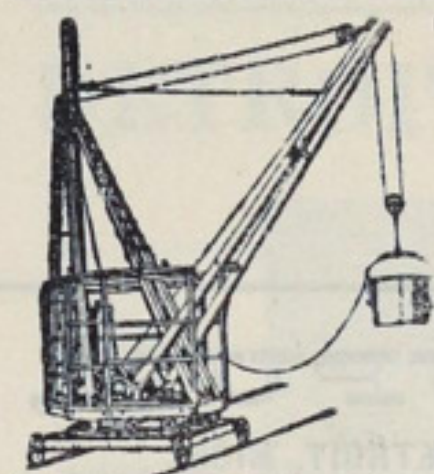
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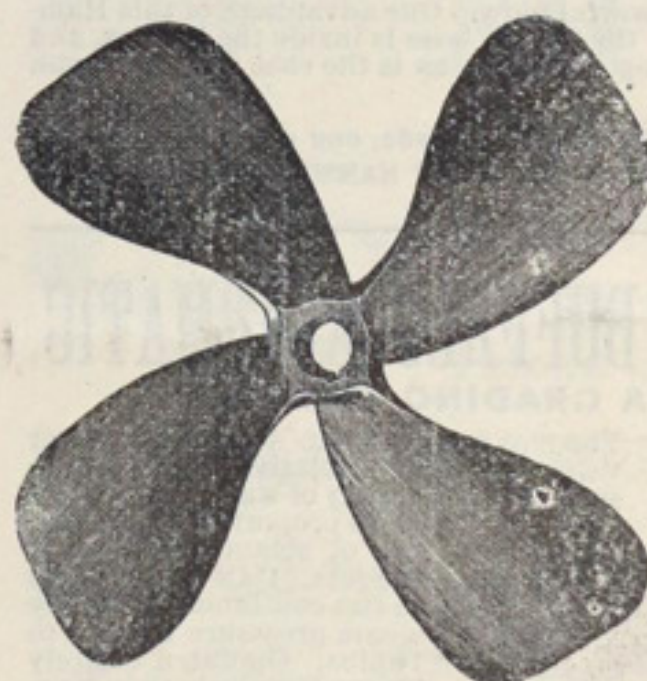
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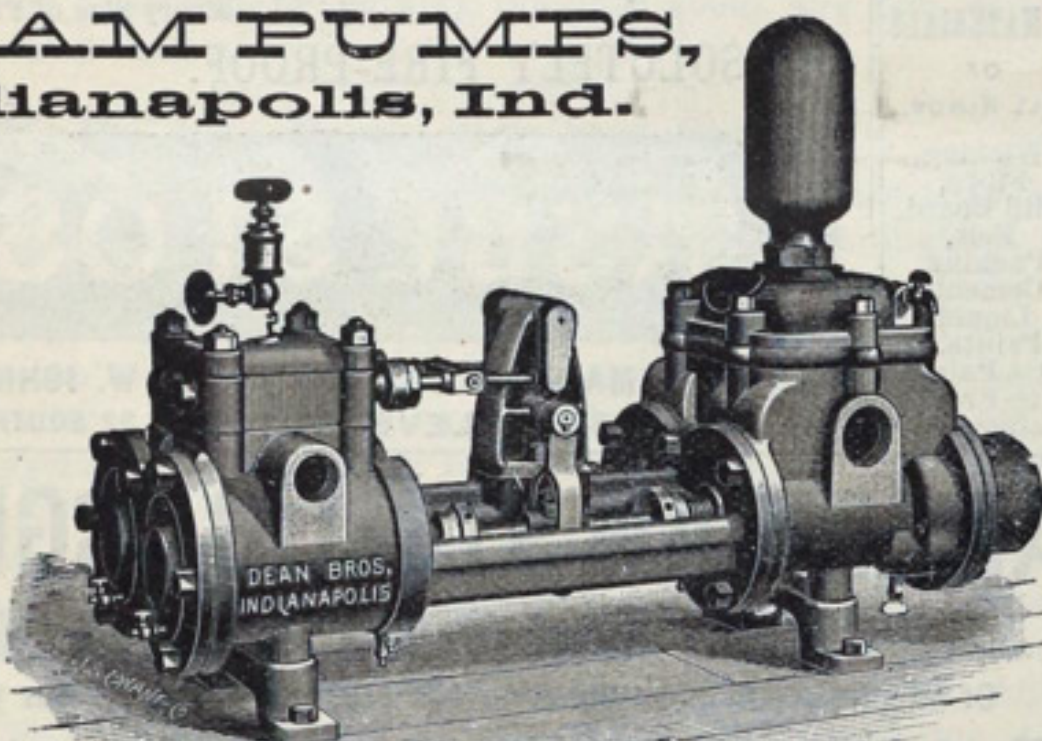
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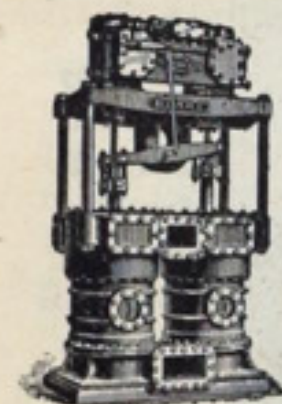
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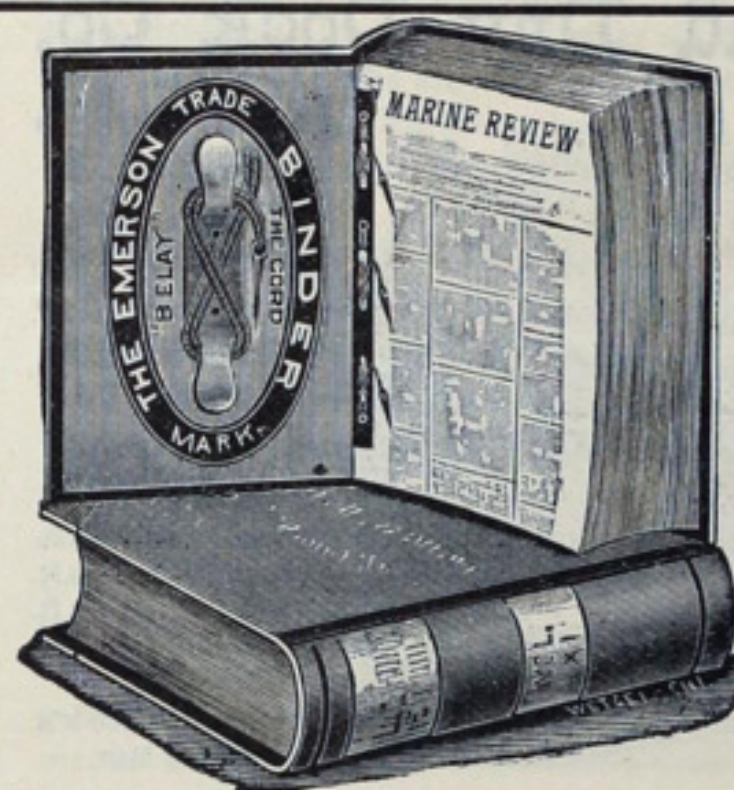
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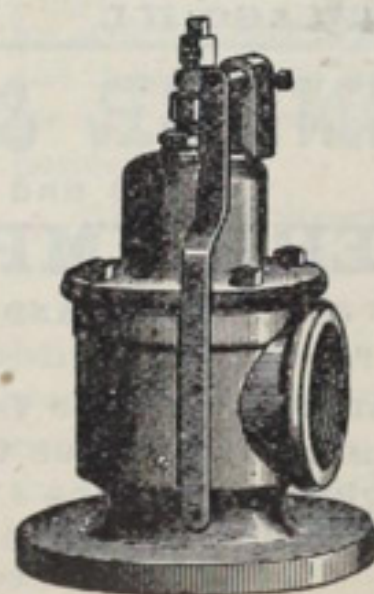
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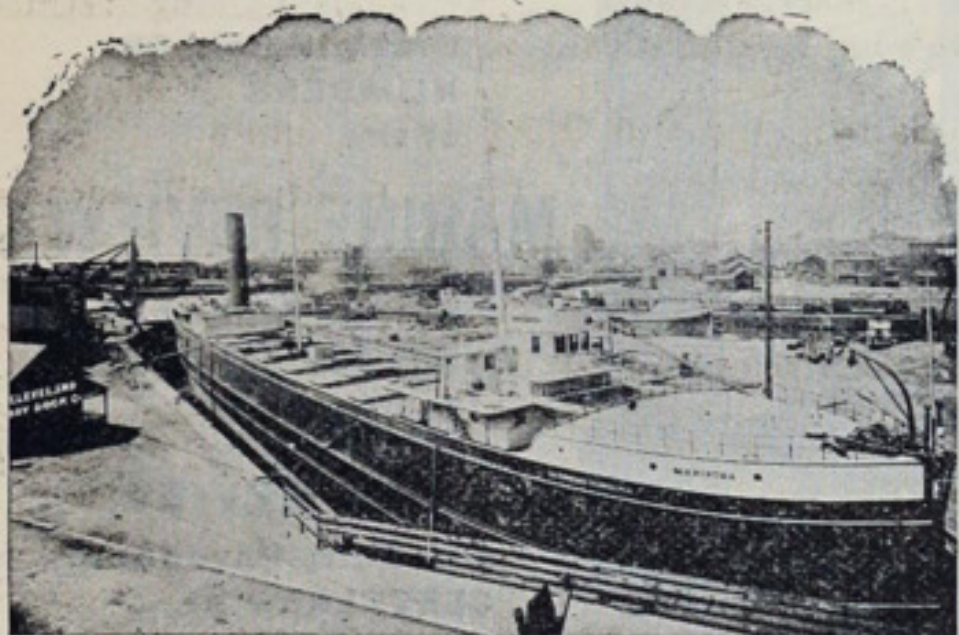
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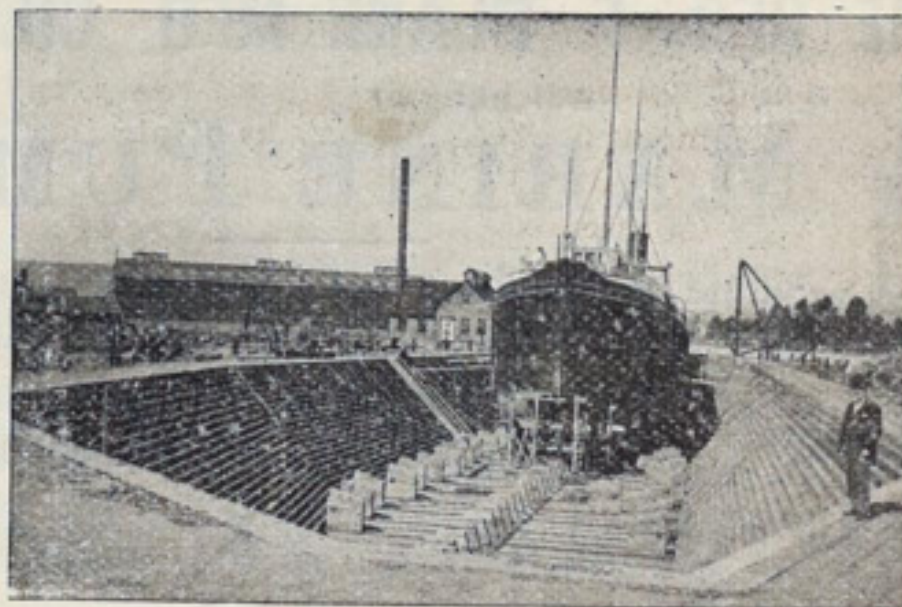
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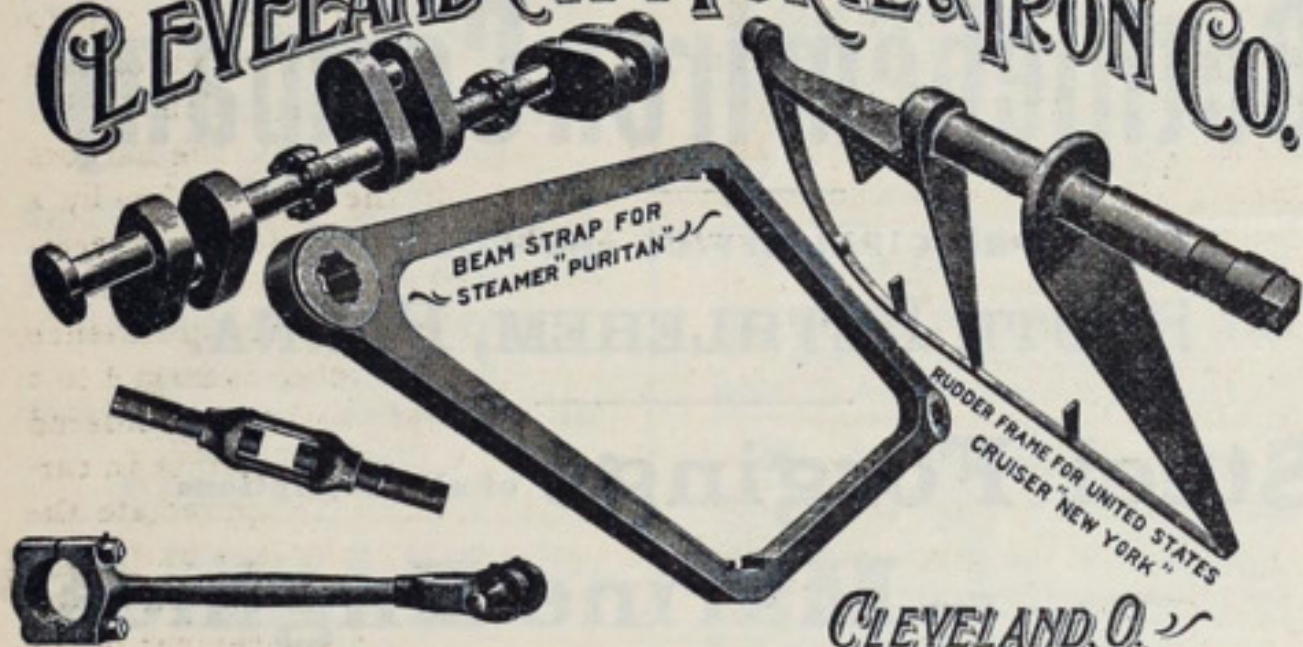
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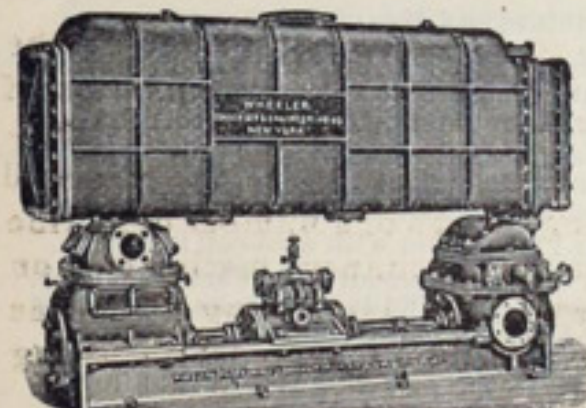
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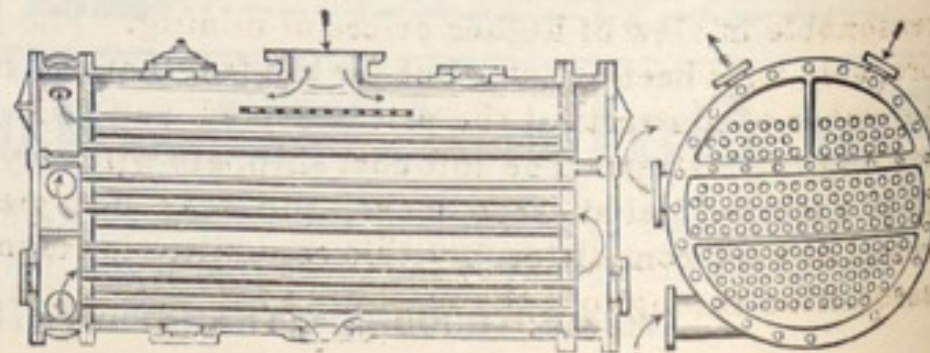
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